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Author: Piotr Skubała

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Post-Industrial Dumps as a "Unique" Experiment for Ecologists

Skubała Piotr

Department of Ecology, University of Silesia, Bankowa 9, 40-007 Katowice, Poland

***Corresponding author:** Piotr S, Department of Ecology, University of Silesia, Bankowa 9, 40-007 Katowice, Poland, Tel: 48 32 359-11-48; Email: piotr.skubala@us.edu.pl

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Editorial

Post-industrial wastelands are still constantly increasing in area; some of them may be dangerous to human health. These facts provide the major stimulus for the reclamation and restoration of large devastated areas. The reclamation of dumps, especially of toxic dumps, is a challenge and is a severe problem of today. For this purpose, a knowledge and understanding of soil development – mainly induced by soil organisms – is an important prerequisite for any form of soil management on dumps [1]. From the viewpoint of reclamation, a practice very poorly developed at this time, knowledge of soil fauna development is required as an indicator for artificial cultivation techniques [2]. The restoration of disturbed ecosystems has recently received increasing attention from ecologists and land-use managers. This is due, in a large part, to more stringent government regulations, which mandate extensive reclamation procedures followed by biological monitoring efforts [3]. It seems obvious that dumps should at first be managed biologically. In this way the negative influence of dumps on the natural environment may be limited, and the beauty of the landscape can be improved. Nevertheless, vegetation cover on dumps may develop naturally. Hitherto, reclamation measures taken on dumps have appeared unsatisfactory in many cases despite the high expenditure of money and effort. Spontaneous succession of plants is more desirable [4, 5], but unfortunately the spontaneous process of colonization and succession is a long-term process.

Much of the research on land restoration has been devoted to the reestablishment of vegetation and vertebrates. Soil fauna has been treated marginally in many restoration practices and studies, whereas we can obtain useful results for derelict land management, acquiring knowledge of all processes during succession on wastelands. Studies on recolonization of arthropods on wastelands are few [6-10], whereas arthropods can drastically influence revegetation efforts via herbivory, seed predation, litter decomposition, pollination, and soil aeration [11]. More empirical studies of these processes on different kinds of dumps are urgently needed to better understand the factors affecting soil fauna development in a post-industrial landscape [12].

The growing area of dumps is a real disaster for humankind, although from the viewpoint of soil ecology dumps are not "waste land". They offer a tremendous experimental field in which to study the colonization by animals and the development of their communities in this hostile environment. A new habitat for many new inhabitants is created as a result of spoil heap construction. A dump is a "land" lacking plants and animals, initially with a complete absence of soil. Then for a long period the "soil" that is present lacks stratification, has insufficient organic matter, few nutrients and an inadequate water content. Additionally, what makes post-industrial dumps an excellent polygon on which to test ecological hypotheses is the simplified and variable relationships between living components. Furthermore, they are usually not under threat by prospectors. The variability of spoil heaps and the range of environmental conditions established on post-industrial dumps result in a heterogeneous environment for soil biota [13, 14]. Furthermore, different reclamation technologies used on dumps also create varied conditions. So ecologists get an experiment with many differentiated environmental variables

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